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Impact of extra-curricular activities on adolescents' connectedness and cigarette smoking: final report

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Impact of extra-curricular activities on adolescents' connectedness and cigarette smoking

FINAL REPORT

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Final Report to Healthway

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SUMMARY

In Australia, cigarette smoking is still the leading cause of preventable death and yet in the past 10 years, despite efforts that have been made in the classroom and through the media, there have been limited reductions in adolescent smoking. The Extra-curricular Project builds on the work of two other projects conducted by researchers from the Child Health Promotion Research Centre (CHPRC). The Smoking Cessation for Youth Project (SCYP), conducted by the Western Australian Centre for Health Promotion Research, led to the identification of connectedness as a key mediator of cigarette smoking. The role of extra-curricular activities in mediating school connectedness was explored in the subsequent formative evaluation (conducted by the CHPRC) which was used to inform the Extra-curricular Project, and identified a range of benefits for students who participate in extra-curricular activities through increasing school connectedness.

The Extra-curricular Project aimed to identify and monitor the potential benefits of participation in extra-curricular activities, via increases in school and family connectedness, in reducing cigarette smoking and a range of other health compromising behaviours.

This project tracked a longitudinal cohort of Year 8 students over two years. A stratified random sample of metropolitan secondary schools was drawn. In total 18 schools were recruited to the study and within these schools, passive parental consent to participate in data collection for the three years of the project was obtained for 2,791 eligible Year 8 students. Baseline data were collected from 2,666 of these students in Year 8 (96%). Of these 2,666 students, 2,257 (76%) completed questionnaires in Year 9 (Test 2) and 2,019 (71%) in Year 10 (Test 3).

Each year schools provided data on the extra-curricular activities they offered to students, the numbers of students and staff participating in each activity and the time committed to each activity by both staff and students, by way of completion of the School Extra-curricular Activities Review. Response rates

varied between 67% in the first year and 94% in the final year. When counting the numbers of separate activities nominated by the schools, the non-government schools offered a higher number of extra-curricular activities (between 19% and 220% more on average) than the government schools.

Data were collected from the students using self-complete questionnaires to measure students' participation in extra-curricular activities as well as their tobacco, alcohol and illegal drug use, educational outcomes, psychological attributes and connectedness to school and family. Extra-curricular participation was categorised as participation in sports, arts and recreational and other activities. In the second and third year of the study the questionnaires were shortened and individualised for each school according to the specific activities offered within the school in order to facilitate students' reporting of their extra-curricular participation. Questionnaires were administered by trained personnel and absent students were followed-up to increase response rates.

Approximately half of the students responding to the survey were male (52%), 54% indicated that their mother/female carer had a post-secondary qualification, 57% indicated that their father/male carer had a post-secondary qualification and about 75% of the students lived with both their mother and father. Approximately one in three students lived in a family where at least one family member smoked and at least one in three students reported that one or more of their close friends had smoked cigarettes in the past year.

In Year 8, 3% of the students had smoked in the past 7 days, 2% of students were smoking regularly, more than half (51%) had drunk an alcoholic drink in the past 4 weeks, 13% had consumed more than five alcoholic drinks at one time in the past month, 7% had ever used marijuana and 3% had tried other illegal drugs at least once in their life. A greater proportion of students had used drugs in Year 9, specifically 6% had smoked in the past 7 days, 3% smoked regularly, two-thirds (66%) had drunk alcoholic in the past 4 weeks, 26% consumed hazardous levels of alcohol in the past month, 15% had ever used marijuana and 6% had tried other illegal drugs at least once in their

lifetime. When the students were surveyed in Year 10, tobacco use was similar to that in Year 9 but alcohol use had increased and a greater percentage of the students had tried marijuana at least once. In total, 7% of the students had smoked in the past 7 days, 4% were smoking regularly, 70% had drunk an alcoholic drink and 36% had participated in hazardous alcohol consumption in the past 4 weeks, 21% had used marijuana and 8% had tried other illegal drugs at least once in their life.

The majority of students participated in school and/or community sport extra-curricular activities each year (71% or higher). Fewer students reported participating in school and/or community arts than in sports extra-curricular activities and participation declined from 63% to about 45% in Year 9 and 10. Similarly, participation in sporting activities was greater than in extra-curricular recreation and other organised activities, where 55% participated in such activities at school and/or in the community in Year 8, 43% when they were in Year 9 and 44% when they were in Year 10.

The percentage of the students that participated in at least one school extra-curricular activity (of any type), whilst high overall, declined from Year 8 (85%) to Year 10 (70%). When looking at participation in the different types of activities at school, participation in extra-curricular sports and arts activities declined from Year 8 to Years 9 and 10 but participation in recreational and other activities increased slightly.

The associations between participation in school extra-curricular activities and a number of student outcomes (in Year 9 and in Year 10) were assessed. When analysing Year 9 outcomes, participation was measured as participation in at least one school extra-curricular activity in each of Year 8 and Year 9, and for the Year 10 analyses, participation in each of Year 8 to Year 10. Significant associations were found between participation in school extra-curricular activities and a number of student outcomes. When the students were in Year 9, those who had participated in at least one school activity in Year 8 and in Year 9 were significantly less likely to have smoked cigarettes in the last week, smoke regularly, have ever used marijuana, have

been absent from school on four or more days in the previous term and scored higher on the pro-social behaviour scale than those that did not participate. When in Year 10, the students who had participated in extra-curricular activities every year in their first three years of secondary schooling were significantly less likely to be absent from school on four or more days in the previous term, more likely to wish to complete a post-secondary qualification, scored higher on the pro-social behaviour scale and were more connected to their school. No associations were found in Year 9 or Year 10 between participation as defined for these analyses and alcohol use. Additionally, in Year 10, participation was not associated with tobacco or illegal drug use.

These findings need to be interpreted in light of the following factors. The sample was drawn from schools in the metropolitan area and thus results are not necessarily applicable to non-metropolitan schools. Measurement error with regard to participation in extra-curricular activities may have occurred due to the complexity of the issues involved. In the analyses, no differentiation was made between different levels of participation e.g. time spent, and types of activities i.e. sport, arts, other, only students who were in the school from Year 8 were included in the analyses and it was necessary to assume that missing values indicated non-participation. Further analyses are proposed to assess the potential impact of participation in terms of time spent and the relevant impact of different types of activities.

Focus groups were conducted in August 2006 with staff from 14 of the participating schools and explored school staff perceptions about extra-curricular activities and the programs running in their schools. The information gathered from this process could guide recommendations regarding the investment of resources into extra-curricular activities to the Department of Education and Training, the Catholic Education Office and the Association of Independent Schools. Overall agreement in the focus groups existed amongst staff that extra-curricular activities were beneficial for students' health, social development and academic performance and that the social development benefits outnumbered the health and academic benefits.

Most staff also agreed that students' participation in extra-curricular activities helped to improve learning and discipline in the classroom by way of contributing to building stronger relationships with staff. School benefits were also discussed and included improving a school's public image, building school identity and spirit and aiding student discipline and providing students with an opportunity to give back to the community in which they belong.

Dissemination of results from this project to date have been limited pending final analyses and results. Local seminars, national and international conference presentations and publications in peer-reviewed journals will be used to report the findings in future years and methods for disseminating the results more widely will be explored with key stakeholders in Western Australia as well as national and international stakeholders.

1. INTRODUCTION

Cigarette smoking is the primary cause of preventable death in Australia, killing approximately 19,000 people every year (Miller & Draper, 2001). Up to 90% of smokers begin smoking by 18 years of age (Chassin, Presson, Sherman, & Edwards, 1990; Kandel & Logan, 1984). In spite of the obvious public health burden, current approaches have led to very modest decreases in adolescent smoking in the past 10 years (Hill, White, & Effendi, 2002). The Smoking Cessation for Youth Project (SCYP) (Western Australian Centre for Health Promotion Research, 2001) was a group randomised control trial that resulted in lower cigarette smoking among Year 10 students who received a harm minimisation intervention over two years. This project also led to the identification of connectedness as a key mediator of cigarette smoking. The role of extra-curricular activities in mediating school connectedness were explored in a subsequent formative evaluation which was used to inform the current study. The aim of this longitudinal cohort study is to identify and monitor the potential benefits of participation in extra-curricular activities, via increases in school and family connectedness, in reducing cigarette smoking and a range of other health compromising behaviours.

1.1 Cigarette Smoking Interventions

According to the most recent (2002) Australian Secondary School Alcohol and Drug (ASSAD) survey data, the prevalence of most cigarette smoking has declined significantly since 1999. A number of meta-analyses and reviews of school-based smoking and other drug education curricular interventions have been conducted (Bellew & Wayne, 1991; Best, Thomson, Santi, Smith, & Brown, 1988; Botvin, 2000; Bruvold, 1993; Dusenbury, Falco, & Lake, 1997; Ennett, Tobler, Ringwalt, & Flewelling, 1994; Flay, 2000; Hansen, 1992; Kinder, Pape, & Walfish, 1980; Lantz et al., 2000; Rooney & Murray, 1996; Rundall & Bruvold, 1988; Stead, Hastings, & Tudor-Smith, 1996; Sussman, 2001; Tobler, 1997; White & Pitts, 1998). However, reviews of the impact of school-based prevention programs indicate they have had modest success

(Best et al., 1988; Bruvold, 1993; Flay, 2000; Rooney & Murray, 1996). New evidence- and theoretical-based approaches to address cigarette smoking and other drug use warrant investigation to further reduce prevalence and related harm.

1.2 The Impact of Connectedness on Smoking

Connectedness refers to the social bonding of an individual that may be protective of drug use and other health compromising behaviour (McBride et al., 1995; Resnick et al., 1997). Connectedness to school, family and the community have been identified as important mediators of a number of health outcomes. Recently the important role school plays as a protective factor against cigarette smoking and other drug use has emerged (Blum & Rinehart, 1997; Martin, Levin, & Saunders, 2000; McBride et al., 1995; Resnick et al., 1997). McBride et al (1995) identified the importance of the school environment in providing students with opportunities to increase their connectedness to school. **Extra-curricular activities provide an important medium for increasing school connectedness** (McBride et al., 1995).

Adolescents who demonstrate less 'connectedness' to their families, schools and society are more likely to smoke, particularly as regular smokers (Bertrand & Abernathy, 1993; Blum & Rinehart, 1997; Byrne, Byrne, & Reinhart, 1995; Charlton, 1996; Conrad, Flay, & Hill, 1992; Emery, White, & Pierce, 2001; Flay, 2000; Hawkins, Catalano, & Miller, 1992; Krohn, Naughton, Skinner, Becker, & Lauer, 1986; Martin, Levin, & Saunders, 2000; Resnick et al., 1997; Resnicow, Ross-Gaddy, & Vaughan, 1995; Tyas & Pederson, 1998). Conversely, **stronger connectedness to school** (Blum & Rinehart, 1997; Hawkins, Catalano, Kosterman, Abbott, & Hill, 1999; Hawkins, Catalano, & Miller, 1992; Martin, Levin, & Saunders, 2000; McBride et al., 1995; Resnick et al., 1997) **has been associated with lower smoking prevalence**. Resnick et al (1997) found higher school connectedness was associated with less smoking, alcohol and marijuana use, older age of sexual debut, less emotional distress and fewer suicidal thoughts or attempts.

In accordance with Problem Behaviour Theory, (Donovan, 1996; Donovan, Jessor, & Costa, 1988; Jessor, 1987; Jessor, Chase, & Donovan, 1980; Resnicow, Ross-Gaddy, & Vaughan, 1995) it is hypothesised that benefits related to extra-curricular participation will be mediated through the construct of school connectedness. There is substantial evidence that cigarette smoking, illicit drug use, school drop out, truancy, delinquency, and unsafe sexual practices among adolescents cluster (Copeland, Shope, & Waller, 1996; Donovan, 1996; Donovan, Jessor, & Costa, 1988; Farrell, Danish, & Howard, 1992; Gilmore et al., 1991; Jessor, 1987; Jessor, Chase, & Donovan, 1980; Resnicow, Ross-Gaddy, & Vaughan, 1995). According to Problem Behaviour Theory, one reason why these "problem" behaviours cluster is that society views each of them as unacceptable, deviant, or rebellious (Donovan, 1996; Jessor, 1987; Resnicow, Ross-Gaddy, & Vaughan, 1995). Accordingly, adolescents who use drugs become disconnected from school, family and their community and may be more likely to become part of the "deviant" subculture, where these behaviours are more prevalent and acceptable (Resnick et al., 1997). Conversely, universal or selective (specific to higher risk) **strategies to assist adolescents to feel they are important, contributing to and valued by their school, family and community are likely to reduce transition to health compromising behaviours** (Donovan, 1996; Hawkins, Catalano, & Miller, 1992; Jessor, 1987).

1.3 What are Extra-curricular Activities?

For the purposes of this study, school extra-curricular activities have been defined as:

'Activities which: are discretionary; are physically or mentally stimulating; are 'sponsored' by the school; engage students in an active role; and are conducted outside normal teaching times (to a large degree)' (Adapted from Larson & Verma (1999)). In general terms, activities may fall into the categories of sport, recreation, music, arts and service, and exclude those which are compulsory and exclusively conducted during the school day. These themes were agreed upon during in-depth interviews conducted with key Western Australian education and health stakeholders. These activities

may "provide adolescents with opportunities to participate in and gain recognition for constructive group activities" (Krug, 2002).

1.4 Participation in Extra-curricular Activities

According to the Australian Bureau of Statistics, (Australian Bureau of Statistics, 2000) over two thirds of 14-year olds regularly participate in organised extra-curricular activities. Sporting activities were most common with 59% indicating they participated, and 29% participated in arts/cultural activities (some were active in both sports and arts/cultural activities). Only 30% indicated they participated in neither (Australian Bureau of Statistics, 2000). These participation rates are comparable to those reported in other countries. In the United States, 1997 US Youth Risk Behaviour Survey data indicate that 70% of males and 53% of females participated in team sports either at or out of school (Pate, Trost, Levin, & Dowda, 2000). Similarly, data from the Dunedin Multidisciplinary Health and Development Study (DMHDS: New Zealand) indicate that among 13 to 15 year olds, 62% participated in at least one organised sporting group and 47% participated in at least one cultural/youth group (McGee, Williams, Howden-Chapman, Martin & Kawachi, 2006).

1.5 Benefits of Extra-curricular Activities

Empirical evidence suggests extra-curricular programs are associated with increased connectedness to school (Cooper, Valentine, Nye, & Lindsay, 1999; Eccles & Barber, 1999; Finn, 1989; Gilman, 2001; Holloway, 2000; Lamborn, Brown, Mounts, & Steinberg, 1992; Marsh, 1992). In a longitudinal study, both sporting group and cultural group participation were significant predictors of parental, peer and school attachment as well as perceived personal strengths (McGee, et al., 2006). These relationships persisted after controlling for gender, socio-economic disadvantage, within family social support, early peer attachment and reading ability. Moreover, connectedness measures at 15 years of age predicted connectedness at 21 years. A measure of parental connectedness in adolescence was the

strongest predictor of absence of suicidal ideation in early adulthood in DMHDS.

Via the potential mediating factor of connectedness, extra-curricular programs have resulted in a number of positive benefits in educational, physical health and mental health outcomes for students who participate (see Table 1).

Table 1: Benefits of Participation in Extra-curricular Activities

Area of benefits	*Benefits associated with participation in extra-curricular activities*
Physical health	• Less smoking and illicit drug use (not alcohol use) (Ferron, Narring, Cauderay, & Michaud, 1999; Pate, Trost, Levin, & Dowda, 2000; Youniss, Yates, & Su, 1997) • More seatbelt use (Ferron, Narring, Cauderay, & Michaud, 1999; Pate, Trost, Levin, & Dowda, 2000) • Greater fruit and vegetable consumption (Pate, Trost, Levin, & Dowda, 2000) • Less teen pregnancy (Pate, Trost, Levin, & Dowda, 2000)
Mental health	• Lower risk of suicidal ideation (Ferron, Narring, Cauderay, & Michaud, 1999) • Less somatic complaints (Ferron, Narring, Cauderay, & Michaud, 1999) • More confidence in future (Ferron, Narring, Cauderay, & Michaud, 1999) • Better body image (Ferron, Narring, Cauderay, & Michaud, 1999) • Higher self-esteem, life satisfaction and sense of competence (Baumeister & Leary, 1995; Issac, Sansone, & Smith, 1999; R. W. Larson & Verma, 1999; Marsh, 1992; Maton, 1990; Williams & McGee, 1991) • Higher self-perceived confidence (Williams & McGee, 1991) • Greater perceptions of strengths (Williams & McGee, 1991)
Education and career	• Higher academic self-concept, attendance and educational attainment (Cooper, Valentine, Nye, & Lindsay, 1999; Finn, 1989; Lamborn, Brown, Mounts, & Steinberg, 1992; Marsh, 1992) • Considerably lower school 'drop-out' (Mahoney & Cairns, 1997; Mahoney & Stattin, 2000) • Lower subsequent criminal arrest (as young adults) (Mahoney & Stattin, 2000)

While some have suggested that involvement in extra-curricular activities may interfere with a student's education, Marsh found participation in extra-curricular activities actually strengthened ties to school and educational outcomes, as well as social and athletic self-concept (Marsh, 1992).

A limitation of the findings of the majority of studies cited in Table 1 is that **benefits associated with involvement in extra-curricular activities have been drawn from cross-sectional studies**. These studies cannot illuminate the causal direction of the relationships. Proponents may argue that participation leads to the benefits outlined above, however, the reverse may equally be true, i.e.: that reporting the benefits above may lead to increased participation (Rosenberg, 1965). Of the longitudinal studies reporting the prospective impact of extra-curricular involvement, Larson (1994) found no relationship between involvement in extra-curricular activities and self-esteem, however, Marsh (1992) found participation improved a range of educational and school bonding outcomes. Mahoney and Cairns (1997) reported considerable decreases in school drop-out especially among students with lower academic achievement and those who had behavioural difficulties.

1.6 How do extra-curricular activities work?

The Carnegie Corporation report, *A Matter of Time* (1992), argued that organised extra-curricular activities are of benefit especially to higher risk students because they displaced opportunities to become involved in risky activities (e.g. cigarette smoking), teach competencies and pro-social values and increase social supports and networks (Carnegie Corporation of New York, 1992).

Marsh (1992) provides longitudinal data to support a **'commitment to school' hypothesis**, in which he argues that participation in extra-curricular activities improves academic self-concept. In turn, improved academic self-concept mediates positive effects on a range of educational outcomes. Although not as strong a predictor, improved social self-concept also mediated outcomes (Marsh, 1992). It is hypothesized that both these mediators may be closely

related to connectedness, and will impact on health as well as educational outcomes.

Few studies have addressed the impact of extra-curricular activities directly on cigarette smoking. Only one empirical study using an extra-curricular intervention program to address cigarette smoking was located. Brown et al (2002) found their extra-curricular smoking prevention intervention reduced regular smoking among male, never smokers. The intervention did not impact on females or students who had smoking experience prior to Year 8. The intervention comprised activities "inconsistent with smoking", (Brown et al., 2002) however, they required specific funding and would not normally be offered by schools without incentive.

1.7 Direction of this Research

Changes in the education system and increased teacher workloads in Western Australia, as well as recent rapid increases in the cost of public liability insurance have placed increasing pressure on extra-curricular programs provided by Western Australian schools. In our formative research in the area, **key education and health stakeholders have unanimously expressed concerns about decreases in the breadth and depth of extra-curricular programs being provided in Western Australian schools.**

The aim of this project was to evaluate the potential positive impact of extra-curricular programs on a range of outcomes being measured. Evidence from this research will be used to guide advocacy to policy-makers regarding the direction of resources into extra-curricular programs. The health and educational benefits of extra-curricular programs have been recognised by the Western Australian Department of Education with their commissioning of a Taskforce to produce a strategic review document, *Investing in Government Schools: Putting Children First* (Department of Education Services, 2001). Recommendations arising from the report include exploring strategies to provide more opportunities for increasing extra-curricular activities (Department of Education Services, 2001). This project will provide timely

evidence for the approach and has received strong support from the Department of Education. It also provides an ideal partnership opportunity between the health and education sectors due to the wide range of potential benefits that may result from extra-curricular programs (i.e. both positive health and educational outcomes).

2. OBJECTIVES

The aim of this study was to monitor the health and educational outcomes associated with participation in extra-curricular activities currently implemented in Western Australian schools using a longitudinal cohort of Year 8 students. Using a naturalistic intervention of students' participation in in- and out-of-school extra-curricular activities, the project set out to ascertain the benefits of participation in extra-curricular activities.

The Primary outcome objective of this study was:

- To determine if regular cigarette smoking (within the last week) is lower among students involved in extra-curricular activities.

Secondary outcome objectives of this study were:

- To determine if connectedness to school is higher among students involved in extra-curricular activities.
- To determine if connectedness to family is higher among students involved in extra-curricular activities.
- To determine if alcohol and other drug use is lower among students involved in extra-curricular activities.
- To determine if involvement in problem behaviours is lower among students involved in extra-curricular activities.
- To determine if educational outcomes (attendance, grades and academic aspirations) are better among students involved in extra-curricular activities.

3. PROGRESS

3.1 Project Management

A strong management team is responsible for overseeing this project. The Management committee is responsible for the day to day administration of the project and is comprised of members of the Child Health Promotion Research Centre, unless otherwise indicated:

Professor Donna Cross

Dr Greg Hamilton (Canterbury District Health Board, NZ)

Dr Marg Hall

Ms Tommy Cordin

Ms Stacey Waters

Ms Thérèse Shaw

3.2 Sample and Recruitment

Recruitment of schools to the study was conducted in February and March 2004. The selection criteria for schools to participate in this project were that schools:

- must be located in the Perth metropolitan area
- must have an enrolment of 50 or more students in Year 8 in 2003
- must not be a participating school in the Marijuana Education Project (24 Government schools).

To assist in the sample selection process a database containing all schools in Western Australia was obtained from the Department of Education. The SEIFA index score of each school's postcode was used as a measure of school socio-economic status. Prior to random selection, Perth metropolitan schools that met the above criteria (91 schools) were stratified by Government/non-Government status (60:40), school population size and socio-economic status.

The study proposed to recruit 21 schools however after the Edith Cowan University Ethics Committee granted passive (rather than active) consent, power calculations were revised to reflect a difference in the estimation of parental non-consent. The resultant calculations identified 18 schools would be adequate to recruit the required number of students to obtain sufficient power for this study.

Table 2: Stratified Random Sampling Procedure

	School size	Recruited Government schools (11)	Recruited non-Government schools (7)
Low SES	Small	3	2
	Large	2	2
High SES	Small	2	1
	Large	4	2

Schools were randomly selected from within the eight strata identified in Table 2. The Principal of each selected school was sent a letter (Refer Healthway Report December 2004, Appendix 1) followed by a telephone call inviting their school to take part in the study. If schools declined, they were replaced by another school within the same stratum. This process was followed until enough schools had been recruited into the study in accordance with the numbers required in each selection stratum. Thirty schools were approached before achieving the required sample of 18 project schools. Eight of the 30 schools declined the invitation to participate (most citing other priorities within the school or their involvement in other programs) with a further four schools undecided about their participation at the time of reaching adequate sample size.

After a school Principal indicated interest in participating in the project, the name of a staff member to coordinate the project within the school was requested. This coordinator was also telephoned and provided with information about the project. A letter of Agreement (refer Healthway Report December 2004, Appendix 2) was sent to the Principal of each of the 18 recruited schools to sign (with a copy sent to the nominated school

coordinator) outlining the school's expected involvement in the project and the CHPRU proposed commitment to the school.

In the second year of the study (2005), a letter was sent to the school Principal outlining the school's involvement with the project for the year. All schools recruited into the study in the first year remained in the cohort for the second year of the study.

In 2006, all schools were sent an individualised school report detailing the results from the 2005 data collection, and a letter outlining the school's involvement for the year. One school withdrew from the study in 2006 because it had closed down at the end of 2005 due to declining student numbers.

3.3 Consent

All Year 8 students at participating schools were invited to participate in the study. Passive parental consent was sought for students to complete three questionnaires conducted annually over three years. A letter outlining the project with a consent form attached was sent, by the school, to parents of all Year 8 students at their home address (refer Healthway Report December 2004, Appendix 3). Parents were asked to return the consent form in the reply-paid envelope provided if they did not want their child to participate in the student surveys. Just over 3100 parent consent letters were mailed home to parents of Year 8 students. Refusal of consent for their child to complete the student questionnaires was received from 202 parents (6.5%).

3.4 Study Design

This longitudinal study tracked a cohort of students over three years from Year 8 to Year 10 (age 12/13 years to age 14/15 years). During this period, students at study schools were exposed to a range of extra-curricular activities offered by the schools. As such, the intervention was a 'naturalistic' one, without a fixed or controlled dose designed or assigned by the

investigators. The study design for this research is presented in Table 3 below.

Table 3: Study design for the Extra-curricular Project

Extra-curricular program - Phase 1 (Year 8)	Baseline Year 8 (July '04)	Extra-curricular program - Phase 2 (Year 9)	Test 2 Year 9 (Nov '05)	Extra-curricular program - Phase 3 (Year 10)	Test 3 Year 10 (Nov '06)
X_1	O_1	X_2	O_2	X_2	O_3

O=observation X=school initiated extra-curricular intervention

3.5 Instruments

Two instruments were developed for this study – a self-complete survey for students and an extra-curricular activities audit tool or Extra-curricular Activities School Review for completion by the school's nominated project coordinator.

3.5.1 Student Questionnaire

Students were surveyed using a self-complete questionnaire. The questionnaire was designed to determine students':

- level of participation in extra-curricular activities
- cigarette smoking and other drug use
- educational outcomes
- psychological attributes
- connectedness to their school
- connectedness to their family.

The **baseline Year 8 student questionnaire** (refer Healthway Report December 2004, appendices 4 & 5) was pilot tested with 79 students at a non-Government secondary school that had not been approached to participate in the longitudinal study. Changes were made to the instrument and further reliability testing was conducted through test-retest with 136 students at two

non-Government high schools also not approached to participate in the longitudinal study. The test-retest procedure resulted in some changes to the length, organisation and wording of the baseline student questionnaire. Intervention measurement in the baseline questionnaire required students to identify the name, frequency and duration of the extra-curricular activities they participated in at their school and in their community, and whether the activities were sport, arts or recreation.

In the second year of the project, the **2005 Test 2 Year 9 student questionnaire** (refer Healthway Report December 2005, appendices 1 & 2) was a revised version of the 2004 survey in response to concerns raised by a number of teachers at the student questionnaire administrations in 2004. It was identified that some students found completion of questions about extra-curricular activities on the surveys difficult and the questionnaire took a long time to complete. Whilst it was thought that asking detailed questions on participation would facilitate recall, it was found that the questions were too detailed and may have resulted in non-response. Recognising that the data from the extra-curricular activities questions was in many cases incomplete, the student questionnaire was shortened and extra-curricular activities listed on the survey were individualised for each school to reflect the activities that the schools indicating they were offering.

The project's principal investigators and management committee completed a comprehensive review of the student questionnaire to ensure that it included questions specifically addressing the components of the theoretical framework for the study that had been developed earlier from the literature review. Secondly, the management committee identified possible rewording and layout improvements of questions about extra-curricular activities. Sport, arts and recreation extra-curricular activities commonly identified by students in the 2004 survey were listed on a standard version of the survey. The revised standard version of the student questionnaire was pilot tested in May (Term 2) with 112 students at a government high school that had not been approached to participate in the longitudinal study. This pilot test procedure resulted in

some further changes to the length, organisation and wording of the Test 2 student questionnaire.

After pilot-testing the standard version, the questionnaire was individualised for each of the longitudinal study schools. Based on information provided in the 2005 Extra-curricular Activities School Reviews, a list of the extra-curricular activities offered to Year 9 students by term was incorporated into the questionnaire and individually prepared for each of 16 study schools. For the two schools who did not return a completed Extra-curricular Activities School Review, a list of activities by term was developed from the most commonly listed extra-curricular activities in the 2004 student questionnaire and a standard version of the questionnaire was produced. This individualising of questionnaires facilitated students' reporting of their participation.

In the final year of the project, the **2006 Test 3 Year 10 student questionnaire** (Appendices 2 & 3) followed the format of the individualised 2005 surveys with the record of the extra-curricular activities provided by schools in the Extra-curricular School Reviews informing the lists of extra-curricular activities on the surveys.

3.5.2 Extra-curricular Activities School Review

The Extra-curricular Activities School Review was developed to obtain information from schools about the extra-curricular activities offered to students. Development of the review was based on the refinement of the audit instrument used in the Extra-curricular formative study in 2003. The Extra-curricular Activities School Review asked schools to describe the range of extra-curricular activities available to Year 8 students (grouped by type of activity: Sport, the Arts, Recreation and Other), the numbers of students and staff participating in each activity, the time committed to each activity by both staff and students and the costs and resources involved in each activity.

In 2004, the **Extra-curricular Activities School Review** form was piloted with staff from two schools involved in the test-retest of the student questionnaire. Staff members who completed the pilot Review were interviewed by telephone to assess the ease of completing the forms, the time taken to complete the forms, who they consulted with to help complete the forms and to identify any problems they had with the definition of extra-curricular activities.

In June 2004 (for Terms 1 and 2) and October 2004 (for Terms 3 and 4) the modified Extra-curricular Activities School Review (refer Healthway Report December 2004, Appendices 6 & 8) was posted to the Review coordinator at each cohort school (the staff member nominated by the Principal at recruitment and confirmed with the school Project Coordinator). The Extra-curricular Activities School Review comprised of:

- a cover letter which included an outline of the Extra-curricular Activities School Review, an explanation of its purpose and how the information would be used;
- a 10-step action plan on how to complete the forms;
- a clear and comprehensive definition of extra-curricular activities; and
- four sets of forms to be completed for all extra-curricular activities offered by the school, colour coded according to the category of the activity (Sport, the Arts, Recreation and Other).

The Review coordinator was asked to consult with colleagues, as required, for assistance with the completion of the Extra-curricular Activities School Review forms. They were asked to complete a Personnel form providing the names of staff members with whom they consulted.

In anticipation of some schools having difficulties in completing the forms for the Terms 1 and 2 Extra-curricular Activities School Review, each Review coordinator was asked to complete the forms and participate in a telephone interview before returning the completed forms to the CHPRC. The interview was designed to answer any questions about the definition of extra-curricular

activities, to clarify the inclusion/exclusion criteria as well as collecting information about school camps and specialist programs.

In 2005, due to the considerable efforts involved in following up schools to complete and return the Terms 3 & 4, 2004 Extra-curricular Activities School Review forms and to ensure that the list of extra-curricular activities offered by schools could be incorporated into the students questionnaires prior to questionnaire administration in November 2005, a **revised 2005 Extra-curricular Activities School Review** form (refer Healthway Report December 2004, Appendix 3) was developed for schools to complete once in the year in August (Term 3), hence providing information for the whole year.

The project's principal investigators and management committee completed a comprehensive review of the Extra-curricular Activities School Review forms based on feedback and responses from 2004 school coordinators and in line with the literature review and theoretical framework underlying the study. The amount of information schools were asked to provide about extra-curricular activities offered to Year 9 students was reduced and the wording and organisation of the forms improved succinctness (eg the 2005 Extra-curricular Activities School Review forms were presented in three categories of extra-curricular activities - Sport, Arts and Other, a modification on the four categories in the 2004 Extra-curricular Activities School Review forms - Sport, Arts, Recreation and Other). These changes were aimed at making the forms easier and quicker to complete in an effort to improve response rates and response time as the Reviews needed to be returned in time to use the information to individualise the student questionnaires for each school. The revised format was retained and used for the **2006 Extra-curricular Activities School Review Form** (Appendix 1).

The 2005 and 2006 Extra-curricular Activities School Review comprised of:

- A cover letter which included an outline of the Extra-curricular Activities School Review, an explanation of its purpose and how the information would be used. It also indicated that the extra-curricular activities

provided in the Review would be used to individualise the student questionnaire for each school (giving students a list of the extra-curricular activities their school offered), thereby making the questionnaire easier for students to complete.

- Three sets of forms to be completed for all extra-curricular activities offered by the school to Year 9 students (in 2005) and Year 10 students (in 2006), colour coded according to the category of the activity (Sport, the Arts and Other). A cover page attached to each set of forms provided a clear and comprehensive definition of extra-curricular activities and instructions on how to complete the forms. A summary of the activities that the school reported were offered to students in the previous year was included for each category of activities to be used as a prompt for personnel completing the forms.
- A personnel page seeking information from the Review coordinator about the number of Year 9 students (in 2005) and Year 10 students (in 2006) at the school, the Specialist Programs run by the school and the names of key staff providing input into the completion of the Review forms.

3.6 Data Collection

3.6.1 Student Questionnaire

Trained personnel from the Child Health Promotion Research Centre at Edith Cowan University administered baseline student questionnaires in June and July 2004 in Year 8 classrooms, Test 2 student questionnaires in October and November 2005 in Year 9 classrooms and Test 3 student questionnaires in October and November 2006 in Year 10 classrooms to students for whom parental consent had been provided in 2004. The administrations followed a strict procedural and verbal protocol (Appendix 4) which staff from the CHPRC and six Health Promotion undergraduate students from Edith Cowan University had been trained to deliver as part of a three hour training session associated with the administrations (Appendix 5).

The pilot and test-retest processes had revealed some students, particularly those with low literacy skills, had difficulty completing some of the questions in the survey. Due to the complexity of some questions seeking information about participation in extra-curricular activities and the potential for students to struggle with the definition of these activities, the questionnaire administrator read aloud the definition of extra-curricular activities and 'walked' students through the steps involved in answering the first set of questions of the questionnaire (those questions measuring extra-curricular participation) before students began completing the questionnaire.

Teachers were asked to remain in the classroom to help with behaviour management during the questionnaire administrations. Confidentiality was maintained by the use of identification numbers on questionnaires and teachers were asked not to look at students' responses. Students were asked to place their completed questionnaire in an envelope provided and seal the envelope. These envelopes were then collected by the Edith Cowan University administrator and delivered immediately to the CHPRC at Edith Cowan University. In appreciation of their time taken to complete the survey, all students in the classes were given a ruler in 2005 and an eraser in 2006.

Follow-up of students absent from school at the time of the questionnaire administrations was carried out in each year of the project. A questionnaire with the student's name written in pencil on the cover, a page of instructions on how to complete the questionnaire and a reply-paid envelope was left with the class teacher. On the student's return to school, the teacher was asked to have the student complete the questionnaire, erase their name from the cover, seal it in the reply-paid envelope and take it to the school officer for posting to the CHPRC.

Approximately three weeks after the questionnaire was administered a letter was sent to the class teacher to prompt the return of 'absent' questionnaires. A fax back form was included with the letter, providing teachers with the opportunity of explaining why student completion of the questionnaire was not

possible. Reasons given included long term absenteeism due to extended holidays or illness and chronic truancy. A second follow-up letter with a replacement copy of the student questionnaire was sent approximately two weeks prior to the end of term asking teachers again to follow-up 'absent' students.

Completed questionnaires were sent to a data entry service and data was entered into SPSS. Data was cleaned using the stringent protocols developed by the CHPRC and the data for the different schools merged into one data set.

3.6.2 Extra-curricular Activities School Review and Interview

Baseline

Schools were sent the first Extra-curricular Activities School Review 'pack' in June 2004 and asked to provide details about the extra-curricular activities offered in Terms 1 and 2 of 2004. A telephone interview was conducted with the Extra-curricular Activities School Review coordinator before returning the completed Review forms. Follow-up to encourage the completion and return of the Review forms included a reminder fax and a telephone call to the Review coordinator.

A second Extra-curricular Activities School Review 'pack' was sent to schools in October 2004 asking the Extra-curricular Activities School Review coordinator to provide information about the extra-curricular activities offered to students in Terms 3 and 4, 2004. Included with this 'pack' was a photocopy of the completed forms the school had provided for Terms 1 and 2 to be used as a reference for any activities still offered in Terms 3 and 4. Follow-up in 2004 to encourage the completion and return of the Review forms included a reminder letter and a telephone call to the Review coordinator. No interview was conducted at this time point.

As response rates at the end of 2004 for the Extra-curricular Activities School Review were low, follow up with school coordinators at five schools for the Terms 3 and 4, 2004 Extra-curricular Activities School Review and at three schools for the Terms 1 and 2 as well as Terms 3 and 4, 2004 Extra-curricular Activities School Review, carried over into 2005. The nominated school coordinators were telephoned and offered a day of paid teacher relief or gift vouchers to the value of $250 to help ease the burden of finding time to complete the forms. Replacement copies of the Extra-curricular Activities School Review forms were posted out and school coordinators were asked if, at a minimum, a list of extra-curricular activities offered by term to Year 8 students in 2004 could be provided. This intensive follow-up elicited Extra-curricular Activities School Review forms (in varying degrees of completion) from all but one school for 2004.

Test 2

Schools were sent the third Extra-curricular Activities School Review 'pack' in Term 3 (August) 2005 asking the Review coordinator to collate information about the extra-curricular activities offered to Year 9 students in 2005 (Terms 1, 2, 3 and 4). A covering letter sent with the Extra-curricular Activities School Review forms to the Review coordinator indicated that the purpose of the Review forms was to collect information from the school about extra-curricular activities that are offered to Year 9 students. It explained that these data would be combined with information collected from students in Term 4 to enable the investigation of possible associations between types of extra-curricular activities offered and students' health and educational outcomes. In addition, schools were advised that the extra-curricular activities described in the Review would be used to individualise their school's student questionnaire so it gave students a list of the extra-curricular activities their school offered, with the intention of making the questionnaire easier for students to complete. Schools were offered gift vouchers to the value of $250 (or one day of paid relief time) in appreciation of the time and effort taken to complete the Extra-curricular Activities School Review forms.

Test 3

The fourth Extra-curricular Activities School Review 'pack' was sent to each study school in Term 3 (August) 2006 asking the Review coordinator to collate information about the extra-curricular activities offered to Year 10 students that year. A covering letter was sent with the Extra-curricular Activities School Review forms to the Review coordinator outlining that the purpose of the Review forms was to collect information on extra-curricular activities offered to Year 10 students. The letter highlighted that this information would be combined with data to be collected from students in Term 4 and would inform the individualisation of the student questionnaire such that students had a list of the extra-curricular activities offered by their school. As in 2004 and 2005, a $250 gift voucher (or one day of paid relief time) was provided to schools in appreciation of the time and effort taken to complete the Extra-curricular Activities School Review forms.

Follow up to encourage the completion and return of the Review forms in 2005 and 2006 took the form of a letter and one or more telephone calls to the Review coordinator. No interviews were conducted in 2005 or 2006.

3.6.3 Focus Groups

Four focus groups were conducted in August 2006 with staff from 14 of the 17 study schools. The purpose of the groups was to gather information that could be used to provide direction for recommendations to the Department of Education and Training, the Catholic Education Office and the Association of Independent Schools regarding the investment of resources into extra-curricular activities. The groups were selected according to SES level, size of school, proximity to each other and where possible, grouped according to whether they were a government or non-government school. Schools were invited to send up to three staff members responsible for and/or involved in extra-curricular activities to join staff from two other study schools for a two hour session to discuss issues surrounding participation of staff and students

in extra-curricular activities. To help schools identify staff who may be suitable to attend, staff members who had had input into the Extra-curricular Activities School Review forms completed in 2005 were named.

A maximum of two half days of paid teacher relief was offered to each school to cover time out of school for staff attending. The group discussions, led by an experienced ECU staff member, focused on teachers' beliefs about extra-curricular activities and how they work in schools. (Refer Appendix 8 for Moderator's guide.) Opinions were also sought on teachers' perceptions of the benefits of participation in extra-curricular programs and their insights into enablers for and barriers to the provision of more comprehensive extra-curricular activities programs.

More detailed methods used for the focus groups can be found in Appendix 7.

3.7 Other Tasks Completed

Bullying Training (2005)

In appreciation of their participation in the Extra-curricular Project, up to three teachers from study schools were invited to attend a training in the Friendly Schools & Families Program for bullying prevention, reduction and management conducted by CHPRC staff at Edith Cowan University, Churchlands campus in June 2005. A copy of the Friendly Schools and Families whole-school pack was provided at no cost with the training. The half-day training was attended by 27 teachers from 11 schools.

School Reports

An individualised, de-identified report on student responses to extra-curricular activity involvement, use of cigarettes, alcohol and other drugs and information relating to health and connectedness was provided to each study school at the start of 2005 for data collected in 2004 and at the start of 2006 for data collected in 2005 (Appendix 6). Schools were invited to view these

data, which allowed comparison with the entire cohort, together with a summary of the information they had provided in the Extra-curricular Activities School Review about participation, time commitments and resources related to the extra-curricular activities offered to students, to help them in planning future extra-curricular programs in their school. A final report to schools for data collected in 2006 and outlining the results of the project is currently being produced for distribution to study schools.

3.8 Methods for analyses in this report

3.8.1 Definition of extra-curricular activities

To establish some consistency in understanding of the sorts of activities that could be considered extra-curricular, a definition of extra-curricular activities was provided to the teachers as well as the students. The following definition of extra-curricular activities at schools was included on the review forms staff were asked to complete. Whilst the definition referred to these activities as occurring mostly outside of normal teaching times, there were some activities e.g. leadership roles, school year book, in which students participated that would be considered extra-curricular i.e. "extra to the curriculum" but which took place within class time.

Definition of Extra-curricular Activities for school staff

Structured extra-curricular activities are:

- Conducted outside normal teaching times (to a large degree)
- Discretionary
- Physically or mentally stimulating
- 'Sponsored' by the school
- Engaging students in an active role

(Adapted from Larson & Verma, 1999)

They are **NOT**:

- Compulsory
- Exclusively conducted during the school day
- Assessable in terms of school grading

The following definition was provided to the students, on the cover of the questionnaires and was read and explained to students at the beginning of the questionnaire administrations.

Definition of Extra-curricular Activities for students

Extra-curricular activities are those you choose to do (not compulsory) and are not part of normal classroom work.

The main types of extra-curricular activities are:
- Sport (eg. basketball, cricket, soccer);
- The arts (eg. music, dance, drama); and
- Other activities (eg. chess club, school year book, peer support activities, debating, public speaking).

These activities can be done on the school grounds or in the community.

- School extra-curricular activities are organised by the school, like a drama production, sport, debating or a club and usually take place at school, during lunch / recess, before / after school, or on the weekend.
- Community activities are not organised by the school but are activities organised by adults at a Club or Rec. Centre or are private lessons and could include sports clubs, modelling classes or art classes.

3.8.2 Measures used in analyses of student responses

Data on a number of student measures are presented in this report, including demographic characteristics, smoking behaviours, alcohol and other drug use, educational outcomes, connectedness to school, connectedness to family and student participation in school and community sports, arts and other activities. In addition, the number and range of activities offered by the schools in the study, are described.

In accordance with the objectives of the study, the following variables were measured for the students:

- Smoking in the last 7 days and regular smoking (Objective 1);
- Alcohol consumption in the past month and hazardous consumption (Objective 2);
- The use of marijuana and other illegal drugs (Objective 3);

- Educational outcomes including grades, absence from school and academic aspirations (Objective 4);
- Connectedness to school (Objective 5);
- Connectedness to family (Objective 6); and
- Psychological attributes as measured by the Strengths and Difficulties Questionnaire i.e. emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems and pro-social behaviour (Objective 7).

Details of the dependent variables used in the analyses are given in Table 4 and details of the predictor variables in Table 5.

Table 4: Description of dependent variables used in analyses of student responses

Concept	Variable	Question number (Yr 10 q'aire)	Values
Smoking tobacco	Smoked in last week (even a few puffs)	Q10	Yes / No
	Regular smoker – smoked on 3 or more days in last 7 days (and more than 10 cig's in lifetime)	Combination of Q10 -Q13	Yes / No
Alcohol use	Drank alcoholic drink in past 4 weeks (even a few sips)	Q16	Yes / No
	Hazardous alcohol consumption in past 4 weeks	Q17	Yes / No
Illegal drug use	Ever used marijuana in lifetime	Q18a	Yes / No
	Ever used other illegal drugs in lifetime	Q18b	Yes / No
Educational outcomes (self-report)	Grades – Student's grades same as or better than most others in year group	Q23	Yes / No
	Attendance – Student absent 4 or more days in last term	Q24	Yes / No
	Academic aspirations – Student would like to complete qualification beyond Yr 12	Q25	Yes / No
Connectedness	School connectedness (5 items)	Q19a-e	Responses combined into standardised score. (Higher value reflects greater connectedness)
	Family connectedness (14 items)	Q22a-n	Responses combined into standardised score. (Higher value reflects greater connectedness)
Strengths and Difficulties Questionnaire (SDQ) (25 items)	Total difficulties score (20 items)	Q26a-y (except a,d,i,q,t)	Responses combined into standardised score. (Higher value reflects greater difficulties)
	Pro-social score (5 items)	Q26a,d,i,q,t	Responses combined into standardised score. (Higher value reflects greater pro-social behaviour)

Table 5: Description of predictor variables used in the analyses

Variable	Values
Gender	1 = Female, 0 = Male
Mother's education	1 = Post-secondary qualification, 0 = Yr 12 or less
Father's education	1 = Post-secondary qualification, 0 = Yr 12 or less
Family structure	1 = Live with mother & father 0 = Don't live with both
Family smoking – someone in family they live with smokes	1 = Yes, 0 = No
Friends smoking – close friend(s) smoked in last year	1 = Yes, 0 = No
School size (number of students in Yr8 - Yr12)	1 = Less than 800, 2 = 800 or more
Sector	1 = Government 2 = Non-government
Participation in school extra-curricular activities in Year 8 and Year 9	1 = Yes, 0 = No
Participation in school extra-curricular activities in Year 8, Year 9 and Year 10	1 = Yes, 0 = No

3.8.3 Data analyses for associations between participation and dependent variables

The potential effects of participation in extra-curricular activities at school were evaluated by comparing outcomes for students who did and did not participate in extra-curricular activities. Separate analyses were conducted for the data collected in Year 9 and Year 10.

Thirteen dependent variables were analysed. Four of these were continuous scores which were standardised for ease of interpretation of results as the original scales had no intrinsic meaning. In addition one variable, connectedness to family, was log transformed in order that normality assumptions would be met for the regression analyses. The remainder of the variables were binary or recoded to binary variables. Multilevel linear regression and logistic regression models were fitted using the Stata 8 software package. In each instance the values of the dependent variable were modelled as a function of extra-curricular participation, significant covariates and the values of the dependent variable in Year 8. This ANCOVA modelling approach to the analyses maximises the use of the available data. A random intercept was included in each model to account for the clustering of students within schools.

Only participation in school extra-curricular activities was considered for these analyses and cumulative participation was used. That is, for the analyses of the outcomes in Year 9, for a student to be categorised as having participated in school extra-curricular activities the student needed to have participated in at least one activity in Year 8 and at least one in Year 9. Similarly participation for the Year 10 analyses was classified as participation in at least one school activity in each of Year 8, Year 9 and Year 10. Note, that for these analyses, no distinction is made between the different types of activities nor between different amounts of time or levels of involvement. In addition, a conservative approach was taken and missing responses are assumed to indicate non-participation.

4. RESULTS

The following results are presented in this report:

- Numbers of questionnaires/forms completed and response rates for student surveys and staff review forms;
- Characteristics of schools at baseline plus the extent and type of extra-curricular activities offered;
- Characteristics of students and descriptive statistics for the dependent variables and participation in extra-curricular activities;
- Associations between participation in school extra-curricular activities and the dependent variables in Yr 9 and Yr 10; and
- Results from the focus groups conducted with the schools.

4.1 Response Rates

In total 30 schools were approached in order to recruit the 18 which agreed to participate in the study (60%). Seventeen recruited schools remained in the study until the last data collection. One school closed down after the Test 2 data collection resulting in 29 students leaving the study.

Data were collected in the form of self completion questionnaires from students in Year 8, Year 9 and Year 10 over the three years of the study. Due to the longitudinal nature of the study, at each collection point the students in the year level were surveyed for whom consent was received at baseline. The student response rates are given in Table 6.

Table 6: Student response rates

	Baseline Year 8 June 2004		Test 2 Year 9 Oct/Nov 2005		Test 3 Year 10 Oct/Nov 2006	
	n	%	n	%	n	%
Total Sample	2791	100%	2525	100%	2327	100%
Total Completed	2666	95.5%	2393	94.8%	2116	90.9%

The response rate for the student questionnaire at the Baseline data collection was 96% and remained consistently high at 95% and 91% for Test 2 and Test 3 respectively. The number of students in the total sample dropped from Baseline to Test 2 and Test 3 due to the closure of one school, students changing to different schools and students declining to participate or being absent on the administration day and not completing a questionnaire on their return to school. In addition some students who had not responded at baseline, usually because they were absent from school and did not complete a questionnaire on their return to school, completed questionnaires at Test 2 and/or Test 3.

In total, 2257 respondents (85% of the 2666 who responded at Baseline) completed a questionnaire at Baseline and at Test 2, 2019 (76% of the 2666) completed a questionnaire at Baseline and Test 3 and 1903 respondents (71% of the 2666) completed questionnaires at all three data collection time points, namely Baseline, Test 2 and Test 3.

The project co-ordinator in each school was asked to complete or arrange for the completion of the Extra-curricular Activities School Review form by a staff member with knowledge of the area, in order to obtain detailed data on the extra-curricular activities of each type (sports, arts and other) offered by the school. Response rates for the review forms are presented in Table 7.

Table 7: Extra-curricular Activities School Review form response rates

n(%)	2004 Terms 1&2 Schools n=18	2004 Terms 3&4 Schools n=18	2005 Terms 1- 4 Schools n=17	2006 Terms 1- 4 Schools n=17
Sports	15 (83%)	12 (67%)	16 (89%)	16 (94%)
Arts	15 (83%)	14 (78%)	15 (83%)	16 (94%)
Other	16 (89%)	15 (83%)	15 (83%)	15 (88%)

Response rates for the review forms from schools were higher in 2006 (88% or more) than in 2004 and 2005. Response rates were fairly consistent between categories except for Terms 3 and 4 in 2004 where the response rate for sports activities (67%) was lower than the response rates for arts activities (78%) and other activities (83%).

4.2 Characteristics of Schools and Extra-curricular Activities

The characteristics of the 18 schools which participated in the study are shown in Table 8. Although on average the government and non-government schools were approximately equal in size, five of the government schools had more secondary students than the largest non-government school. Just over half of the schools in both sectors fell into the above average category for socio-economic status (the SEIFA index for the school postcode was > 1000).

Table 8: Characteristics of the schools

	Government n=11		Non-government n=7		Total n=18	
Size – total # of secondary students (2005)	median	range	median	range	median	range
	801	359 to 1785	790	404 to 944	790	359 to 1785
Socio-economic status – above average	n	%	n	%	n	%
	6	55%	4	57%	10	56%

The numbers of extra-curricular activities of each type offered by the schools are detailed in Table 9. The numbers of activities are as recorded by the school staff on the Extra-curricular Activities School Review forms and thus are activities seen by the staff as being separate activities. For example, if a school nominated a number of different instrumental ensembles in the arts category then each is counted as a separate 'activity'.

The most common **sports** extra-curricular activities offered by schools included: swimming, tennis and cricket in Term 1; soccer, football and cross country in Term 2; athletics, football and soccer in Term 3; and athletics, rugby and cricket in Term 4. Other common sports extra-curricular activities included: hockey, netball, softball and volleyball.

The most common **arts** extra-curricular activities offered by schools included: band, choir, dance, drama and visual art. The most common **recreation and other** extra-curricular activities offered by schools included clubs/youth groups, leadership training and debating/public speaking.

The overall median number of extra-curricular sports (median=19) and arts (median=20) activities offered in Year 10 was higher than the number offered in Year 8 (median=9, 10 respectively) and Year 9 (median=13, 17 respectively). The overall median number of extra-curricular recreation and other activities offered in Year 9 (median=20) was higher than the number offered in Year 8 (median=9) and similar to that in Year 10 (median=18).

On average, the non-government schools offered a higher number of extra-curricular sports activities, extra-curricular arts activities and extra-curricular recreation and other activities in Year 8, Year 9 and Year 10 than the government schools.

The number of sports extra-curricular activities offered by the non-government schools was noticeably higher (between about 60% and 220% higher on average) than the number of extra-curricular sports activities offered by the

government schools in Year 8 (median=16, 5 respectively), Year 9 (median=23, 11 respectively) and Year 10 (median=23, 14 respectively).

Although the numbers of extra-curricular arts activities offered by the government and non-government schools differed for Year 8 and Year 9 (160% and 60% on average respectively), in Year 10 the two sectors offered similar numbers of arts activities (about 20 activities each on average).

A slightly higher number of recreational and other extra-curricular activities were offered by the non-government schools each year (19-33% more on average).

Table 9: Numbers of extra-curricular activities offered by schools (Extra-curricular Activities School Review form)

	Government				Non-government				Total			
	Mean	Median	Min	Max	Mean	Median	Min	Max	Mean	Median	Min	Max
Year 8[a] # of sports activities offered	6	5	2	16	16	16	9	30	10	9	2	30
# of arts activities offered	9	7	2	23	20	18	9	31	14	10	2	31
# of 'other' activities offered	11	9	6	26	11	12	2	19	11	9	2	26
Year 9[a] # of sports activities offered	16	11	4	44	20	23	6	32	17	13	4	44
# of arts activities offered	16	16	3	34	25	26	6	52	20	17	3	52
# of 'other' activities offered	17	20	2	36	21	24	7	33	19	20	2	36
Year 10[b] # of sports activities offered	15	14	5	28	20	23	8	25	17	19	5	28
# of arts activities offered	16	20	4	25	24	21	3	71	19	20	3	71
# of 'other' activities offered	16	16	8	33	18	19	10	23	17	18	8	33

[a] n=11 for government, n=7 for non-government, n=18 for total, [b] n=10 for government, n=7 for non-government, n=17 for total

4.3 Descriptive statistics for student responses

This section presents descriptive statistics for the student responses using the data from all the students surveyed at Baseline, Test 2 and at Test 3. The results offer some insight into the characteristics of the students and their families, their tobacco, alcohol and other drug use, educational outcomes, connectedness to school and family, psychological attributes as well as their participation in extra-curricular activities in Year 8, Year 9 and Year 10.

Baseline data were collected from students in Term 2 of 2004, Test 2 was collected in Term 4 of 2005 and Test 3 was collected in Term 4 of 2006. A total of 2666 Year 8 students completed and returned the questionnaire at Baseline, 2393 at Test 2 and 2116 at Test 3.

4.3.1 Characteristics of students

About half of the students responding to the survey were male (52%). Just over half indicated that their mother/female carer and that their father/male carer had a post-secondary qualification (54% and 57% respectively). About three-quarters of the students lived a family where the student lived with both their mother and father. (See Table 10.)

A number of questions measured the student's exposure to cigarette smoking (Table 11). Approximately one in three students lived in a family where at least one family member (mother, father or siblings) smoked. In Year 8, a third of the students (33%) reported that one or more of their close friends had smoked cigarettes in the past year, this percentage of students increased to 57% in Year 9 and to two-thirds (67%) in Year 10.

Table 10: Characteristics of students

	n	%
Student gender		
Female	1326	48
Male	1449	52
Mother/female carer education		
Primary/some high school	1133	47
Post secondary (eg. TAFE, Trade, University)	1293	53
Father/male carer education		
Primary/some high school	1000	43
Post secondary (eg. TAFE, Trade, University)	1324	57

Table 11: Students' exposure to tobacco use

	Year 8		Year 9		Year 10	
	n	%	n	%	n	%
Family structure – live with mother and father[1]	1801	77	1644	75	1456	76
Family smoking – yes[2]	875	31	760	33	670	32
Close friend(s) smoked in last year - yes[3]	833	33	1341	57	1401	67

[1] Year 8 n= 2336, Year 9=2180, Year 10=1929
[2] Year 8 n=2666, Year 9 n= 2329, Year 10= 2075
[3] Year 8 n= 2519, Year 9 n=2347, Year 10=2098

4.3.2 Student responses to dependent variables

The dependent variables measured include student smoking in the past week, regular smoking, alcohol consumption in the past week, hazardous alcohol consumption, use of marijuana and other illegal drugs, educational outcomes, connectedness to school and family and psychological attributes.

Tobacco

Students were asked whether they had smoked a puff of a cigarette (or more) in the past 7 days and a number of questions on tobacco use, which were used to categorise them as a regular smoker or not. A regular smoker was defined as a student who had smoked more than 10 cigarettes in their life and had smoked on more than two days in the past week.

In Year 8, 3% of the students had smoked in the past 7 days. The proportion of students smoking in the past week increased to 6% in Year 9 and 7% in Year 10. The proportion of regular smokers remained relatively low, with 2% of students in Year 8, 3% in Year 9 and 4% in Year 10 smoking regularly.

Alcohol

Students were asked whether they had drunk an alcoholic drink in the past four weeks and whether they had participated in hazardous consumption of alcohol in the past 4 weeks. Hazardous consumption of alcohol was defined as drinking five or more standard drinks at one time.

Half of the Year 8 students (51%) had drunk an alcoholic drink in the past four weeks, this percentage increased to two-thirds (66%) in Year 9 and 70% in Year 10.

The proportion of students who had consumed alcohol at hazardous levels in the previous month doubled from Year 8 to Year 9, namely from 13% to 26%, whilst this percentage increased to 36% when the students were in Year 10.

Illicit drugs

Students were asked how many times they had ever used marijuana or other illegal drugs (eg ecstasy, heroin, trips, cocaine) in their lifetime. The percentage reporting illegal drug use doubled from when the students were in Year 8 to Year 9 and more than doubled from Year 8 to Year 10.

Seven percent of the Year 8 students reporting using marijuana at least once in their lifetime. This proportion more than doubled to 15% when the students were in Year 9 and 21% when in Year 10. Three percent of the Year 8 students had tried other illegal drugs at least once in their life, while 6% of them reporting having done so when surveyed in Year 9 and 8% when surveyed in Year 10.

Table 12: Dependent variables: Tobacco, alcohol and illicit drug use

	Year 8		Year 9		Year 10	
	n	%	n	%	n	%
Smoking						
Smoked in last 7 days[1]	78	3	149	6	144	7
Regular smoker[2]	37	2	70	3	74	4
Alcohol						
Last 4 weeks[3]	1275	51	1543	66	1476	70
Hazardous consumption[4]	336	13	622	26	750	36
Drugs (ever use)						
Marijuana[5]	187	7	344	15	429	21
Other illegal drugs[6]	72	3	136	6	169	8

[1] Year 8 n= 2445, Year 9=2339, Year 10=2095
[2] Year 8 n=2454, Year 9 n= 2334, Year 10= 2086
[3] Year 8 n= 2516, Year 9 n=2357, Year 10=2098
[4] Year 8 n= 2526, Year 9=2375, Year 10=2105
[5] Year 8 n=2541, Year 9 n= 2336, Year 10= 2092
[6] **Year 8 n= 2456, Year 9 n=2310, Year 10=2045**

Educational Outcomes

Students' educational outcomes were measured by student self report of their grades, absence from school and academic aspirations. Results are presented in Table 13.

A similar proportion of the students reported that their grades were not as good as most others in their year level in Year 8 (9%), Year 9 (9%) and Year 10 (10%).

Just over half of the students in Year 9 (53%) and Year 10 (54%) had been absent for at least four days in the previous term or could not recall how many days they had been absent. Thirty-four percent of the students reported having been absent for at least four days in the previous term or were unsure of how many days when in surveyed in Year 8.

A similar proportion of the participants in Year 8 (82%), Year 9 (82%) and Year 10 (84%) had academic aspirations of completing qualifications beyond Year 12.

Table 13: Dependent variables: Educational outcomes

	Year 8		Year 9		Year 10	
	n	%	n	%	n	%
Grades – not as good as most others in year level[1]	214	9	209	9	202	10
Absence – 4 or more days in last term/unsure how many[3]	850	34	1230	53	1139	54
Academic aspirations – would like to complete qualification beyond Yr 12[3]	2054	82	1921	82	1774	84

[1] Year 8 n= 2500, Year 9=2319, Year 10=2088
[2] Year 8 n=2518, Year 9 n= 2338, Year 10= 2095
[3] Year 8 n= 2496, Year 9 n=2349, Year 10=2106

Connectedness to School

Connectedness to school was measured by combining the students' responses to five statements regarding their feelings about school into a mean score (range 1 to 4), where a higher score indicated more connectedness to school. The students' levels of connectedness to their school were similar in Years 8, 9 and 10.

Table 14: Dependent Variables: Connectedness to school

	n	mean	sd	median	min	max
Year 8	2583	2.9	0.7	3	1	4
Year 9	2345	2.9	0.7	3	1	4
Year 10	2094	3.0	0.7	3	1	4

Connectedness to Family

Connectedness to family was measured by asking the students to respond to eleven statements and a mean score (range 1 to 5) was calculated as a combination of their level of agreement with each statement. A higher score indicated a higher level of connectedness to their family. Students felt high levels of connectedness to their families in each year they were surveyed.

Table 15: Dependent Variables: Connectedness to family

	n	mean	std	median	min	max
Year 8	2573	4.3	0.6	4.4	1	5
Year 9	2363	4.2	0.7	4.4	1	5
Year 10	2098	4.2	0.6	4.3	1	5

Psychological Attributes

Psychological Attributes were measured using the Strengths and Difficulties Questionnaire (SDQ). The scale consists of 5 subscales, four are combined to obtain a Total Difficulties Score (range 0 to 40), which measures the extent to which the child experiences psychological symptoms, and the fifth subscale is a measure of students' pro-social behaviour and abilities (range 0 to 10).

The mean values for the Total Difficulties Score were similar when the students were in Year 8, Year 9 and Year 10. The mean of just over 11, on a scale which can potentially take on values ranging between 0 and 40, indicates that the majority of students were not experiencing psychological difficulties. The mean values for the Pro-social subscale score were also constant over the three years at a value of about 7. This subscale can range in value from 0 to 10 with higher values indicating greater pro-social skills.

Table 16: Dependent variables: Psychological Attributes

Strengths & Difficulties Questionnaire (SDQ)	Year 8			Year 9			Year 10		
	n	mean	sd	n	mean	sd	n	mean	sd
Total Difficulties Score	2531	11.3	5.9	2351	11.5	5.9	2085	11.3	5.8
Pro-social subscale score	2548	7.0	1.9	2359	6.9	2.0	2089	7.1	2.0

4.3.3 Student participation in extra-curricular activities

Student participation in sport, arts and recreation and other extra-curricular activities at school and within the community was measured (Table 17).

The majority of students participated in school and/or community **sport** extra-curricular activities. However, their participation declined from Year 8 (85%) to Year 9 (76%) and Year 10 (71%). A large proportion of the students participated in *both* school and community sport extra-curricular activities (54% in Year 8, 40% in Year 9 and 36% in Year 10).

Fewer students reported participating in school and/or community **arts** than sports extra-curricular activities. Reported participation rates in school and/or community arts extra-curricular activities were: Year 8 – 63%, Year 9 – 45% and Year 10 – 46%.

Similarly, participation in sporting activities was greater than in extra-curricular **recreation and other** activities. In Year 8, just over half of the students (55%) participated in such activities at school and/or in the community, 43% when they were in Year 9 and 44% when they were in Year 10.

Table 17: Student participation in school and community extra-curricular activities

	Year 8		Year 9		Year 10	
	n=2666		n=2393		n=2116	
	n	%	n	%	n	%
Sport						
School sport only	450	17	437	18	394	19
Community sport only	386	15	428	18	364	17
School and community sport	1426	54	948	40	752	36
No sport	404	15	580	24	606	29
Arts						
School arts only	800	30	516	22	521	25
Community arts only	277	10	243	10	196	9
School and community arts	614	23	314	13	255	12
No arts	975	37	1320	55	1144	54
Recreation & Other						
School other only	668	25	519	22	456	22
Community other only	317	12	294	12	273	13
School and community other	471	18	220	9	194	9
No other	1210	45	1360	57	1193	56

Participation in school extra-curricular activities

Whilst students' participation in school and community activities were described in the previous section, here the extent to which students participated in activities *at school* is described, firstly in terms of any participation versus none, then in terms of the numbers of activities of each type in which they participated after which the numbers of students that participated in each of the more common activities are detailed for Year 8, Year 9 and Year 10.

In Table 18 the numbers and percentages of students who participated in at least one extra-curricular activity at school of any type are given, separately for the students in government and non-government schools.

The percentage of the students that participated in school extra-curricular activities, whilst high overall (70% or more), declined from Year 8 to Year 10.

Table 18: Student participation in school extra-curricular activities

Number & % that participated in school activities	Government		Non-government		Total	
	n	%	n	%	n	%
Year 8 (n=2666)	1337	79	916	94	2253	85
Year 9 (n=2393)	935	64	802	87	1737	73
Year 10 (n=2116)	792	62	690	82	1482	70

Three-quarters of the students (76%) were involved in at least one and 43% of those involved in at least three extra-curricular sports activities in Year 8. However many did not participate in any extra-curricular arts activities (43%) and no recreation and other (51%) extra-curricular activities at their school when they were in Year 8.

In Year 9 and Year 10, the majority of the students did not participate in any school arts activities (66% and 64% respectively) or school recreation and other activities (76% and 70% respectively).

Participation in sports and arts activities declined from Year 8 to Years 9 and 10 but participation in recreational and other activities increased slightly.

Table 19: Number of extra-curricular activities student participated in at school

	Year 8 n=2666		Year 9 n=2393		Year 10 n=2116	
	n	%	n	%	n	%
Sport						
0 activities	468	25	958	42	1017	48
1-2 activities	624	33	507	22	432	20
3+ activities	818	43	828	36	667	32
Arts						
0 activities	827	43	1546	66	1352	64
1-2 activities	534	28	239	10	235	11
3+ activities	574	30	551	24	529	25
Other						
0 activities	910	51	1763	76	1441	70
1-2 activities	584	33	124	5	248	12
3+ activities	283	16	433	19	372	18

As can be seen in Table 20, the most popular school sports extra-curricular activities for Year 8 students in Term 1 and Term 2 were soccer (22%), athletics (18%), basketball (17%), swimming (13%) and netball (13%). In Year 9, the most popular school sports extra-curricular activities for students were basketball (18%), soccer (17%), athletics (16%), netball (10%), swimming (10%) and football (10%). The most popular school sports extra-curricular activities for Year 10 students were athletics (15%), soccer (14%), basketball (14%), football (10%), swimming (10%) and netball (9%). 'Other' sports activities included sports such as badminton, surfing and water polo.

Table 20: Student participation in school sport extra-curricular activities

	Year 8* (n=2666)		Year 9 (n=2393)		Year 10 (n=2116)	
	n	%	n	%	n	%
Athletics	486	18	373	16	307	15
Basketball	460	17	435	18	299	14
Cricket	219	8	127	5	85	4
Cross Country	211	8	158	7	102	5
Football	293	11	239	10	210	10
Hockey	153	6	125	5	102	5
Netball	342	13	251	10	192	9
Rugby	107	4	123	5	66	3
Soccer	598	22	416	17	302	14
Softball/Baseball	205	8	123	5	66	3
Swimming	349	13	246	10	208	10
Tennis	160	6	171	7	128	6
Volleyball	172	6	105	4	155	7
Other	259	10	441	18	420	20

*Only participation in Terms 1&2 presented. Detail on specific activities not collected for Term 3&4.
**Students may have participated in multiple activities eg athletics and basketball.

Overall the most popular school arts extra-curricular activities for Year 8, Year 9 and Year 10 students were visual arts and crafts, drama performance / drama, dance performance / dance and band/orchestra/ensemble.

Table 21: Student participation in school arts extra-curricular activities

	Year 8* (n=2666)		Year 9 (n=2393)		Year 10 (n=2116)	
	n	%	n	%	n	%
Band/orchestra/ensemble	244	9	255	11	198	9
Choir/singing	192	7	156	7	98	5
Dance performance/ dance	256	10	274	11	213	10
Drama performance/ drama	335	13	224	9	194	9
Visual Arts/craft	411	15	247	10	152	7
Musical production^	-	-	93	4	76	4

*Only participation in Terms 1&2 presented. Detail on specific activities not collected for Term 3&4.
^Activity information not collected in Year 8.
**Students may have participated in more than one activity within a category eg band and choir.

The most popular school recreation and other extra-curricular activities for Year 8 students in Term 1 and Term 2 were clubs and youth groups (9%), debating and public speaking activities (7%), hobbies and interests (6%) and leadership training (6%) (Table 22). In Year 9 the most popular school recreation and other extra-curricular activities for students were clubs and youth groups (8%), academic activities (8%), hobbies and interests (6%), tutoring and homework help (5%) and debating and public speaking (5%). The most popular school recreation and other extra-curricular activities for Year 10 students were hobbies and interests (7%), academic activities (6%), clubs and youth groups (6%), tutoring and homework help (5%), debating and public speaking (5%).

Table 22: Student participation in recreation and other school extra-curricular activities

	Year 8* (n=2666)		Year 9 (n=2393)		Year 10 (n=2116)	
	n	%	n	%	n	%
Organised lunch time activities	127	5	65	3	28	1
Clubs and youth groups	238	9	199	8	136	6
Tutoring/homework help	128	5	127	5	115	5
Debating/public speaking	177	7	123	5	115	5
Leadership	156	6	100	4	97	5
Publications/media	55	2	81	3	29	1
Academic	67	3	192	8	137	6
Interests/hobbies	170	6	145	6	141	7
Personal development^	-	-	56	2	18	1
Other^	-	-	114	5	118	6

*Only participation in Terms 1&2 presented. Detail on specific activities not collected for Term 3&4.
^Activity information not collected in Year 8.
**Students may have participated in more than one activity eg debating and leadership.

Participation in community extra-curricular activities

Students were asked about their participation in sports, arts, recreation and other activities *organised by adults in the community*. Their responses in terms of the numbers of activities of each type in which they took part are given in Table 23.

A large proportion of Year 8 students (73%) were involved in at least one and 46% in three or more community sports. Participation declined in Year 9 to 60% and 53% in Year 10, although the percentage involved in three or more sports remained above 40%, namely 47% in Year 9 and 41% in Year 10.

The majority of the students in Year 8 did not participate in organised arts activities (63%) or any organised recreation and other (64%) activities in the community within the year. Participation in these types of activities was lower when the students were in Year 9 and 10, where 76% or more did not participate in any arts or recreation and other activities organised by an adult in the community when they were in Year 9 and Year 10.

Table 23: Number of activities in which student participated in the community

	Year 8 n=2666		Year 9 n=2393		Year 10 n=2116	
	n	%	n	%	n	%
Sport						
0 activities	539	27	955	41	992	47
1-2 activities	548	27	293	13	261	12
3+ activities	933	46	1091	47	863	41
Arts						
0 activities	1225	63	1763	76	1665	79
1-2 activities	417	21	124	5	103	5
3+ activities	318	16	433	19	348	16
Other						
0 activities	1193	64	1803	78	1649	78
1-2 activities	462	25	147	6	139	7
3+ activities	203	11	367	16	328	16

4.4 Associations between extra-curricular participation and dependent variables

Multilevel linear and logistic regression analyses were conducted to assess the association between participation in extra-curricular activities and the following:

- Tobacco use
- Alcohol use
- Illegal drug use
- Educational outcomes
- Connectedness to school and family
- Mental health outcomes

Separate analyses were conducted for the student outcomes in Year 9 and in Year 10. In each instance the values of the dependent variable at baseline were included in the model as well as any predictors found to be significant.

Only participation in school extra-curricular activities was considered for these analyses and cumulative participation was used. That is, for the Year 9 analyses, participation both in Year 8 and Year 9 and for the Year 10 analyses, participation in Years 8, 9 and 10. Note that, for these analyses no distinction is made between the different types of activities nor between different amounts of time or levels of involvement. In addition, a conservative approach was taken and missing responses are assumed to indicate non-participation.

The first nine dependent variables analysed were binary and hence logistic regression analyses were conducted and odds ratios (OR's) are presented as measures of the associations between school extra-curricular participation and each of the dependent variables. The last four dependent variables were continuous scores and thus linear regression analyses were conducted and regression coefficients are presented. The continuous variables were standardised for inclusion in these analyses and so the regression coefficients

can be interpreted relative to a standard normal distribution i.e. a distribution with a mean of zero and a standard deviation of one.

Tobacco use

Tobacco use was assessed in terms of recent use, within the last 7 days, and regular use, on at least 2 days in the last week. The results are summarised in Table 24 and Table 25.

Students who participated in school extra-curricular activities in Years 8 and 9 were significantly less likely than those who had not participated, to have smoked in the previous week when surveyed in Term 4 in Year 9 (OR=0.6, p=0.020). Thus inversely, students who had *not* participated in both years were 1.7 times more likely to report having recently smoked cigarettes. No significant association was found between school extra-curricular participation and recent smoking in Year 10 (p=0.362).

Table 24: Multilevel logistic regression results for smoking cigarettes in the last week

Year level	OR[†]	95% Confidence interval	P value
Year 9 (n=1848)	0.60	(0.39 ; 0.92)	0.020*
Year 10 (n=1684)	0.82	(0.54 ; 1.26)	0.362

[†] Odds ratio: odds of smoking vs not smoking, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, family structure, family smoking & friends smoking.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, gender, family structure, family smoking & friends smoking.)

As for recent tobacco use, a significant association was found between participation and regular tobacco use in Year 9 but not in Year 10. In Year 9, students who had participated in school extra-curricular activities had 0.4 lower odds of smoking regularly, i.e. those who did *not* participate in Years 8 and 9 were 2.7 times *more* likely to have smoked regularly (p=0.002).

Table 25: Multilevel logistic regression results for smoking cigarettes regularly

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1694)	0.37	(0.20 ; 0.69)	0.002**
Year 10 (n=1494)	0.83	(0.46 ; 1.49)	0.528

† Odds ratio: odds of regular vs not regular smoking, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, female carer education, family structure, family smoking & friends smoking.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, male carer education, family structure, family smoking & friends smoking.)

Alcohol use

Students were asked about their alcohol use within the month prior to the survey in terms of any use (even a few sips) and hazardous consumption (5 or more standard drinks at one time in the last 4 weeks). No significant associations were found between school extra-curricular participation, as defined for these analyses, and alcohol use in Year 9 (Table 26) or Year 10 (Table 27).

Table 26: Multilevel logistic regression results for alcohol use in last 4 weeks

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1946)	1.22	(0.97 ; 1.55)	0.089
Year 10 (n=1551)	1.07	(0.83 ; 1.37)	0.619

† Odds ratio: odds of alcohol use vs no alcohol use, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, gender, male carer education & family structure.)

Table 27: Multilevel logistic regression results for hazardous alcohol consumption in last 4 weeks

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1797)	1.04	(0.80 ; 1.34)	0.764
Year 10 (n=1758)	0.90	(0.73 ; 1.12)	0.349

† Odds ratio: odds of hazardous alcohol consumption vs not, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, female carer education & family structure.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure.)

Other drug use

Students' use of illegal drugs was asked in terms of whether they had ever used marijuana and other illegal drugs (e.g. ecstasy) in their lifetime. In Year 9, students who had participated in school extra-curricular activities in the first two years of their secondary schooling were less likely to have ever used marijuana (OR=0.6, p=0.002). (See Table 28.) No significant associations were found between extra-curricular participation and other illegal drug use in Year 9 and participation and illegal drug use in Year 10 (Table 28 &

Table 29).

Table 28: Multilevel logistic regression results for marijuana use ever in lifetime

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1958)	0.62	(0.46 ; 0.84)	0.002**
Year 10 (n=1766)	0.91	(0.70 ; 1.19)	0.499

† Odds ratio: odds of marijuana use vs no marijuana use, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure. Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure.)

Table 29: Multilevel logistic regression results for other illegal drug use ever in lifetime

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1886)	0.75	(0.48 ; 1.17)	0.204
Year 10 (n=1694)	0.96	(0.65 ; 1.42)	0.845

† Odds ratio: odds of other drug use vs no other drug use, ratio of those who did to those who did not participate in school XC activities in previous years
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline & family structure.)

Educational Outcomes

Participation in extra-curricular activities is hypothesized to be associated with students' educational outcomes. These were measured in this study using student self-report of their grades, their school attendance and educational aspirations. For the purposes of these analyses, to identify students who may be experiencing problems, school grades were categorised according to whether the student felt their grades on most of their subjects were not as good as those of most other students in their year level and school attendance according to whether they reported that they had been absent on 4 or more days in the last term or were unsure of how many days they had been absent. Educational aspirations were categorised positively, and students who aspired to qualifications beyond Year 12 were compared to those who wished to only complete Year 12 or a lower year level.

Participation in school extra-curricular activities was not significantly associated with self-reported educational achievement, either in Year 9 or Year 10 (Table 30).

Table 30: Multilevel logistic regression results for school grades

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1771)	0.96	(0.66 ; 1.39)	0.812
Year 10 (n=1558)	1.26	(0.85 ; 1.89)	0.252

† Odds ratio: odds of grades not as good vs grades as good or better than others in the same year level, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, female carer education & family structure.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, male carer education & family structure.)

Participation in school extra-curricular activities was significantly associated with self-reported school attendance, both in Year 9 and Year 10 (Table 31). Students were less likely to be absent from school for four or more days if they had participated in school extra-curricular activities. Inversely, those who had *not* participated in Years 8 and 9 had 1.4 higher odds of being absent in Year 9 (p=0.003) and those who had *not* participated in Years 8, 9 and 10 had 1.6 higher odds of being absent in Year 10 (p=0.000) than those who had participated.

Table 31: Multilevel logistic regression results for absence from school

Year level	OR†	95% Confidence interval	P value
Year 9 (n=1791)	0.71	(0.56 ; 0.89)	0.003**
Year 10 (n=1759)	0.64	(0.52 ; 0.79)	0.000**

† Odds ratio: odds of being absent from school 4 or more days vs being absent from school less than 4 days in the last term, ratio of those who did not to those who did participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, female carer education & family structure.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, family structure, school size and school sector.)

Students who participated in school extra-curricular activities in the first three years of their secondary schooling were significantly more likely to report in Year 10 that they would like to complete a post-secondary qualification (OR=1.7, p=0.003). No association was found when the students were in Year 9. (See Table 32.)

Table 32: Multilevel logistic regression results for academic aspirations

Year level	OR[†]	95% Confidence interval	P value
Year 9 (n=1641)	1.11	(0.80 ; 1.54)	0.548
Year 10 (n=1508)	1.68	(1.19 ; 2.37)	0.003**

[†] Odds ratio: odds of aspirations to complete qualification beyond Yr 12 vs aspirations of finishing Yr 12 or below, ratio of those who did to those who did not participate in school XC activities in previous years.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Odds ratio adjusted for values for dependent variable at Baseline, female and male carer education, family structure and school sector.
Year 10 model: Odds ratio adjusted for values for dependent variable at Baseline, female and male carer education & family structure.)

Connectedness to school

Connectedness to school is seen as a possible mediator of the association between participation in school extra-curricular activities and problem behaviours such as tobacco use. Connectedness was calculated as a mean of five items in the school connectedness scale and standardised.

The association between participation and connectedness to school was not significant in Year 9 (p=0.091). However in Year 10, students who had participated in one or more school extra-curricular activity in each of Year 8, Year 9 and Year 10, reported significantly higher connectedness to their school than did those who had not participated in each of the three years (p=0.032).

Table 33: Multilevel linear regression results for connectedness to school

Year level	Coefficient†	Standard Error	95% Confidence interval	P value
Year 9 (n=1820)	0.08	0.048	(-0.01 ; 0.17)	0.091
Year 10 (n=1591)	0.10	0.048	(0.01 ; 0.20)	0.032*

† Regression coefficient. Variable standardised. Higher score indicates higher connectedness to school.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Regression adjusted for values for dependent variable at Baseline, female carer education & family structure.
Year 10 model: Regression adjusted for values for dependent variable at Baseline, male carer education & family structure.)

Connectedness to family

Participation in school extra-curricular activities and family connectedness were not significantly associated (Table 34).

Table 34: Multilevel linear regression results for connectedness to family

Year level	Coefficient†	Standard Error	95% Confidence interval	P value
Year 9 (n=1756)	0.03	0.045	(-0.06 ; 0.12)	0.525
Year 10 (n=1594)	0.02	0.047	(-0.08 ; 0.11)	0.736

† Regression coefficient. Variable standardised. Higher score indicates higher connectedness to family.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Regression adjusted for values for dependent variable at Baseline, gender, male carer education & family structure.
Year 10 model: Regression adjusted for values for dependent variable at Baseline, male carer education & family structure.)

Psychological Outcomes

Students' psychological outcomes were assessed using the Total Difficulties score (a measure of the extent to which a young person may be experiencing psychological symptoms) and the Pro-social score (a measure of their pro-social behaviour) from the Strengths and Difficulties Questionnaire (SDQ).

Participation in school extra-curricular activities in secondary school was not associated with scores on the Total Difficulties subscale of the SDQ (Table

35). In contrast students who participated in school extra-curricular activities were found to have higher scores on the pro-social subscale on average, both in Year 9 (p=0.000) and in Year 10 (p=0.000). (See Table 36.)

Table 35: Multilevel linear regression results for Total Difficulties Score

Year level	Coefficient†	Standard Error	95% Confidence interval	P value
Year 9 (n=1722)	-0.03	0.27	(-0.55 ; 0.50)	0.923
Year 10 (n=1560)	0.09	0.28	(-0.46 ; 0.65)	0.738

† Regression coefficient. Variable standardised. Higher score indicates more difficulties experienced.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Regression adjusted for values for dependent variable at Baseline, gender, male carer education & family structure.
Year 10 model: Regression adjusted for values for dependent variable at Baseline, male carer education & family structure.)

Table 36: Multilevel linear regression results for Pro-social subscale score

Year level	Coefficient†	Standard Error	95% Confidence interval	P value
Year 9 (n=1806)	0.40	0.09	(0.22 ; 0.58)	0.000**
Year 10 (n=1560)	0.48	0.09	(0.31 ; 0.65)	0.000**

† Regression coefficient: Variable standardised. Higher score indicates more positive outcomes.
* Significant at 5% level
** Significant at 1% level
(Year 9 model: Regression adjusted for values for dependent variable at Baseline, gender, female carer education & family structure.
Year 10 model: Regression adjusted for values for dependent variable at Baseline and gender.)

Limitations

The findings in this report need to be interpreted in light of the following factors. The sample was drawn from schools in the metropolitan area and thus results are not necessarily applicable to non-metropolitan schools. Measurement error may have occurred with regard to the measurement of participation in extra-curricular activity, due to differences in interpretation and misunderstandings of which activities were and which were not extra-curricular (particularly on the part of students) and students' abilities to recall and accurately report their levels of participation. Thus participation may have

been overestimated if students included participation in activities which were not extra-curricular.

When assessing the relationships between participation and student outcomes, levels of participation e.g. time spent, and types of activities i.e. sport, arts, other, were not taken into account, only students who were in the school from Year 8 were included in the analyses and it was necessary to assume that missing values indicated non-participation (this may have led to an underestimate of levels of participation). Further analyses are proposed to assess the potential impact of participation in terms of time spent and the relevant impact of different types of activities.

Conclusion

Significant associations were found between participation in school extra-curricular activities and a number of student outcomes. When the students were in Year 9, those who had participated in at least one school activity in Year 8 and in Year 9 were significantly less likely to have smoked cigarettes in the last week, smoke regularly, have ever used marijuana, have been absent from school on four or more days in the previous term and scored higher on the pro-social behaviour scale than those that did not participate. When in Year 10, the students who had participated in extra-curricular activities every year in their first three years of secondary schooling were significantly less likely to be absent from school on four or more days in the previous term, more likely to wish to complete a post-secondary qualification, scored higher on the pro-social behaviour scale and were more connected to their school. No associations were found in Year 9 or Year 10 between participation as defined for these analyses and alcohol use. Additionally, in Year 10, participation was not associated with tobacco or illegal drug use.

4.5 Summary of Results of Focus Groups

The purpose of the focus groups was to collect qualitative information on the perceived benefits of extra-curricular participation, enablers and barriers to offering extra-curricular activities, the components of successful programs and school staff satisfaction with current programs offered by their schools. School staff who organised and implemented extra-curricular activities in the secondary schools that took part in the longitudinal study participated in the discussions.

Overall agreement existed amongst staff that extra-curricular activities were beneficial for students' health, social development and academic performance and that the social development benefits (such as building student relationships within and across year levels, enhancing leadership skills and providing a sense of belonging to the school) outnumbered the health benefits (which included keeping students fit and healthy and reducing overweight and obesity) and the academic benefits (such as improving students' mental health and enhancing the mind, body and spirit link). Most staff also agreed that students' participation in extra-curricular activities helped to improve learning and discipline in the classroom by way of contributing to building stronger relationships with staff.

School benefits were also discussed and included improving a school's public image, building school identity and spirit and aiding student discipline and providing students with an opportunity to give back to the community in which they belong.

Most staff agreed that there wasn't a need for a policy in relation to extra-curricular activities although many felt a statement about the importance of extra-curricular activities for students that included statements about duty of care would be helpful. Most staff discussed issues related to additional pay or compensatory conditions for staff conducting extra-curricular activities, particularly in government schools. The need for one central coordinator at each school to oversee extra-curricular activities was also discussed as a

potential benefit, rather than mandating extra-curricular activity provision in a policy.

Refer Appendix 7 for more detail on the results of the focus groups.

5. EFFECT OF RESEARCH ON PROFESSIONAL DEVELOPMENT

This project has and will continue to provide training opportunities for a significant number of students at Edith Cowan University.

The Project Director has developed project and personnel management and financial skills as she has overseen the implementation of this project according to the objectives of the research.

This project has also provided many student volunteers with opportunities to develop their skills on a range of tasks including labelling and packing questionnaires, administration of student questionnaires, preparation of questionnaires for data entry and general administrative tasks. All volunteers of the CHPRC work towards the research centre's Research Competency Program.

In 2004, seventeen undergraduate health promotion students from Edith Cowan University completed volunteer work on the project. In 2005, eight undergraduate students from Edith Cowan University completed volunteer work on the project and in 2006, eleven undergraduate students (including four practicum students) completed volunteer work on the project.

In 2007, one postgraduate student commenced doctoral research utilising data collected as part of this project, in combination with data from another Healthway funded research project held by the CHPRC. The data from this project will therefore continue to provide opportunities for training in advanced statistical methods and data analysis techniques for this student. Her doctoral research will expand on the Extra-curricular Project's findings by investigating the influence of school and individual-level social factors on school connectedness and their relationship to mental health outcomes.

6. IMPLICATIONS FOR HEALTH PROMOTION / LINKING RESEARCH TO HEALTH OUTCOMES

Connectedness refers to the social bonding of an individual that may be protective of drug use and other health compromising behaviour (McBride et al., 1995; Resnick et al., 1997). Connectedness to school, family and the community have been identified as important mediators of a number of health outcomes. Recently the important role schools play as a protective factor against cigarette smoking and other drug use has emerged (Blum & Rinehart, 1997; Martin, Levin, & Saunders, 2000; McBride et al., 1995; Resnick et al., 1997). McBride et al (McBride et al., 1995) identified the importance of the school environment in providing students with opportunities to increase their connectedness to school. **Extra-curricular activities provide an important medium for increasing school connectedness.** (McBride et al., 1995)

Adolescents who demonstrate less 'connectedness' to their families, schools and society are more likely to smoke, particularly regularly.(Bertrand & Abernathy, 1993; Blum & Rinehart, 1997; Byrne, Byrne, & Reinhart, 1995; Charlton, 1996; Conrad, Flay, & Hill, 1992; Emery, White, & Pierce, 2001; Flay, 2000; Hawkins, Catalano, & Miller, 1992; Krohn et al., 1986; Martin, Levin, & Saunders, 2000; Resnick et al., 1997; Resnicow, Ross-Gaddy, & Vaughan, 1995; Tyas & Pederson, 1998) Conversely, **stronger connectedness to school** (Blum & Rinehart, 1997; Hawkins et al., 1999; Hawkins, Catalano, & Miller, 1992; Martin, Levin, & Saunders, 2000; McBride et al., 1995; Resnick et al., 1997) **has been associated with lower smoking prevalence**. Resnick et al (Resnick et al., 1997) found higher school connectedness was associated with less smoking, alcohol and marijuana use, older age of sexual debut, less emotional distress and fewer suicidal thoughts or attempts.

The results of the Extra-curricular project add support to these previous findings, indicating that participation in extra-curricular activities in the first two years of high school is associated with less tobacco and marijuana use, lower absenteeism, and higher levels of pro-social behaviour. Students who had

participated in extra-curricular activities in each of Years 8, 9 and 10 reported lower absenteeism, greater educational ambition, more pro-social behaviour and felt more connected to their school. Therefore, these data indicate that support for schools to maintain and/or increase their extra-curricular programs is likely to have a positive effect on improving adolescent health.

The Extra-Curricular Project has the potential to significantly impact on these factors in a positive way by:

- determining appropriate mechanisms for measuring extra-curricular activities offered by schools and participated in by students
- further exploring the protective role connectedness plays in adolescents' lives
- demonstrating links between Western Australian school children's participation in extra-curricular activities and this impact on problem behaviours
- determining which extra-curricular activities have the greatest protective impact on problem behaviours.

7. COMMUNITY BENEFITS FROM THE RESEARCH

The major benefits of the project can apportioned to three groups:

Researchers and Practitioners

This research will allow the practical benefits, in terms of reducing adolescent cigarette smoking, associated with extra-curricular activities to be quantified. As small reductions in prevalence rates have resulted from traditional programs, innovative strategies that target mediators of cigarette smoking warrant exploration. This approach has a potential number of concurrent benefits resulting from hypothesised effects on students' connectedness to school, family and community, including health (reductions in other drug use, reductions in problem behaviours and improved mental health) and educational outcomes (improved attendance, grades and academic aspirations and decreased 'drop-out'). This project will also enhance researchers' understanding of the effect of the 'commitment to school' hypothesis. These benefits will be disseminated to education and youth health practitioners as well as the scientific community.

Schools and Education Systems

While this project may lead to additional research, it will assist schools and education systems to make informed decisions regarding the investment of resources into providing extra-curricular activities. The results indicate that the investment in such programs can provide positive health and socio-emotional outcomes for students as well as positive outcomes for the school community as a whole.

Children

Ultimately, this research will contribute to efforts to reduce adolescents' cigarette smoking and other health compromising behaviours and improve their mental health.

8. PARTNERSHIPS

This project provides an ideal opportunity for partnership between the health and education sectors due to the wide range of potential benefits that may result from student participation in extra-curricular programs (i.e. both positive health and educational outcomes).

Results from focus group and student level data obtained in this study could guide recommendations regarding the policies regarding and investment of resources into extra-curricular activities to the Department of Education and Training, the Catholic Education Office and the Association of Independent Schools.

9. PUBLICATIONS AND SEMINARS

Publications

A number of publications are planned, including journal articles covering the following topics:

- Strategies for the collection of accurate information regarding the levels of children's participation in extra-curricular activities.
- The relative merits of participation in *school* and *community* extra-curricular activities with regard to children's connectedness, educational outcomes, mental health and drug use, in particular tobacco use.
- The relative merits of different types of extra-curricular activities (e.g. sport, arts and other types).
- The associations between levels of participation (numbers of activities, time spent) in extra-curricular activities and children's connectedness, educational outcomes, mental health and drug use, in particular tobacco use.
- To what extent factors such as connectedness mediate the relationship between participation in extra-curricular activities and drug use, in particular tobacco use.

Seminars

The following two presentations have been conducted and others are planned.

Hamilton, G., & Cross, D. (2004, June-July). *Health effects of extra-curricular activities*. Paper presented at the Public Health Association of New Zealand Conference, Christchurch, New Zealand.

Hamilton G., & Cross, D. (2005, September). *Health effects of school extra-curricular activities.* Paper presented at the Public Health Association of Australia Annual Conference, Perth, Western Australia.

10. FURTHER DISSEMINATION

A systematic plan for dissemination of this project will be developed in consultation with key collaborators in relevant government and non-government agencies. The findings of this study will be disseminated to the Department of Education and Training, Catholic Education Office and the Association of Independent Schools.

The results of this study will be disseminated to all project schools via reports and to practitioners and the scientific community through seminars, conference presentations, project reports and peer-reviewed journal articles.

11. REFERENCES

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12. APPENDICES

APPENDIX 1

Extra-curricular Activities School Review (2006)

APPENDIX 2

Test 3 Student Questionnaire (standard version)

APPENDIX 3

Test 3 Student Questionnaire (individualised version)

APPENDIX 4

Test 3 Student Questionnaire Administration Protocol

APPENDIX 5

Agenda for Administrators' Training (2006)

APPENDIX 6

Test 2 School Report

APPENDIX 7

Focus Groups: Methods and Results

APPENDIX 8

Focus Groups: Moderator's Guide